

# INTERNET SKILLS OF INDONESIAN MSMES

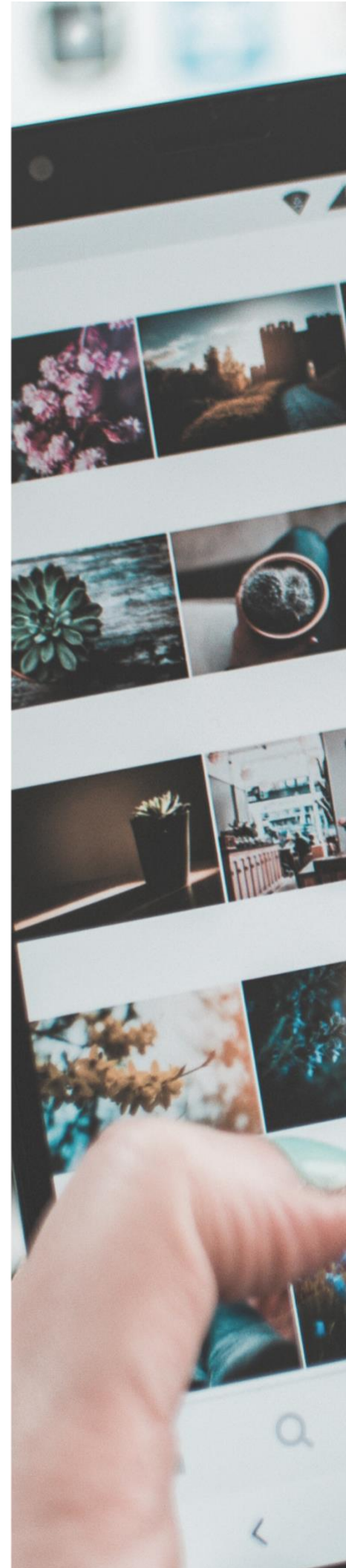
Hana Krisviana, MSc.  
Prof. Robert Simanjuntak, Phd  
Prof. Bambang Brodjonegoro, Phd





# ABSTRACT

To thrive in the era of information society, it has become almost mandatory that business—big or small—have to adopt information technology to increase their business competitiveness. Small business, particularly in the developing countries, have long been marginalized in both business competition and internet research. Hence, this study aims to give a holistic view of the model of internet skills to increase small business competitiveness, and explores how the differing degree of the skills as well as internet usage affect business competitiveness. Putting forward Strategic Skills before Information, Communication, and Content-creation Skills, we reconceptualize internet skills to the unique mobile-centered internet usage pattern of developing country. The model is tested on sample of Micro, Small and Medium Enterprises (MSMEs) owners or managers in Indonesia. We find that Communication and Strategic Skills are the most important skills to increase small business' competitiveness, and the competence are amplified with internet usage, particularly the capital-enhancing ones such as accessing news portal, getting business information, and others. However, all of the skills have significant effect on business competitiveness when mediated with internet usage. The model is shown to be determined by gender, owner or manager's age, internet experience, size of firms, firm revenue, and firm age to some extent, with businesses with more resources (i.e. larger size firm, larger revenue, and firm age) are able to acquire more skills. Concurrently, we confirm that small businesses that possess better internet skills, are able to be more competitive in business landscape, furthering the digital knowledge gap between MSMEs.





## 1 Introduction

As more countries around the world transitioned from an industrial to an information society, more people have adopted information and communication technologies (ICTs) into their daily lives. The use of internet as one of the most dominant communication means in information society, has become very pervasive. As such, mastering the competence to use the internet is considered indispensable for living, working, studying, and even entertaining oneself in this era (Van Dijk & Van Deursen, 2014). Conceptualized as *internet skills*, the competence is described as beyond having technical competencies to operate the internet. It involves an interactive process of working with both the technical aspects and informational aspects of the internet (Van Deursen, Van Dijk, & Peters, 2010, van Dijk & van Deursen, 2014).

These skills are not limited to individuals only. As digital technologies are changing business models, reducing the cost, and redefining distribution, it goes without saying that businesses—large and small—need to adopt ICTs and harness internet skills to stay competitive in this changing society (OECD, 2018). In the long run, it has been suggested that adopting technologies can help firms to increase their revenue and accelerate their growth, which would improve their business competitiveness.

Indonesian market is uniquely comprised of Micro to Small and Medium Enterprises (MSMEs), which account for 99% of existing business firms in Indonesia according to the nation's Ministry of Cooperatives and SMEs (2017), MSMEs are the main source of employment for the Indonesian society, providing livelihoods for 96.7% of Indonesian, mostly women and younger generation (Ministry of Cooperatives and SMEs, 2017). Despite the significance of MSMEs in Indonesia, it is often marginalized within global value chain due to its lack of market connectivity, access to capital, and dearth of technological capabilities (Capri, 2019, Tambunan, 2008). This lack of technological capabilities further widens the digital divide between business players from the developed world and less-developed countries such as Indonesia.

The study of measures of internet skills have largely been reserved for the developed countries (van Dijk, 2005, van Deursen & van Dijk, 2015, van Deursen & van Dijk, 2010), naturally because citizens of developed countries have largely acquired basic internet access, thus makes measuring their internet skills possible. The study of internet skills in developing countries have not been properly conceptualized, as researchers from more developed part of the world measure internet skills as the ability to use internet through personal computers or define the skills with regard to personal computers in mind (James, 2011, van Dijk, 2005, van Dijk & van Deursen, 2010, van Deursen, van Dijk & Peters, 2012).

As a developing country, the internet usage pattern in Indonesia is rather unique. While generally the internet has reached 64.8% of the country's 264.16 million populations (APJII, 2018), the number of mobile phone connection is 124%, surpassing the number of populations (We are Social & Hootsuite, 2020). The use of mobile phone or smartphone connectivity is unmistakably different from the use of personal computers, thus, require different sets of skills. The skills for business players are



arguably distinct, compared to individual usage frequently researched. Previously, a study by Yuldinawati, van Deursen, and van Dijk (2018) found that although Indonesian MSMEs players seemingly lacked in motivation to use the internet, some of the players have apparently used the internet without realizing it through their smartphone. This raises question whether the internet skills have been properly adapted in regard to developing countries case.

Research regarding internet skills among MSMEs have also been lacking in literatures. Most scholars seem to be more concerned with the motivation, attitudes, or barrier for internet adoption among MSMEs (Fillis & Wagner, 2005, Kula & Tatoglu, 2004, Caniëls, Lenaerts, & Gelderman, 2013, Alam, 2009, Tan et al., 2010), while forgetting the fact that there are MSMEs who already adopt the internet to certain extend, with varying degree of internet skills, to gain competitive advantage in business (Celuch & Murphy, 2010, Davis & Harveston, 2000). This warrants a research in itself.

Therefore, this study measures internet skills of MSMEs who have adopted ICTs in their business practice. On first objective is to formulate and test a model that marks the steps to be taken by MSMEs to employ internet skills in their business practice, extending the research of van Deursen and van Dijk (2015) who previously had devised a multifaceted model of internet access. Secondly, we would like to see how different types of internet skills are associated with their usage diversity, which may contribute to differing level of business competitiveness, the goals of every business organization. Accounting the spectrum of internet skills simultaneously will provide new insights into digital knowledge gap between MSMEs, whereby internet savvy firms thrive more, leaving behind those who lack in internet skills.

We focus on Indonesia MSMEs, a developing county which are underrepresented in international literatures. In order to do that, we carefully adapt van Deursen, van Dijk, and Peters' (2012) measures for internet skills with regard to mobile-centered use of internet in Indonesia to provide realistic view of internet skills in developing country, particularly among business players. Its is hoped that this study can provide framework for business players, policy makers, and scholars in developing countries about which skills are particularly relevant to thrive in this information society, as well as the effect it has on business competitiveness. To that end, the following research questions are proposed:

- 1. What is the model of internet skills that can increase small business competitiveness\_*
- 2. How do the varying degrees of internet skills are associated with internet usage, and ultimately business competitiveness?*



## 2 Literature Review

### Internet Usage in Developing Country

Internet usage in less-developed countries is predominantly comprised of mobile connectivity. In recent years, various countries from African and Asian continents have seen mass adoption of mobile technology (Khan et al., 2010, Ochara & Mawela, 2014) on account of the governments' investment in ICTs infrastructure and supporting ICTs policies. In developing country whose citizens are largely from low-income groups, mobile technology is seen as cheaper alternatives to personal computers (James, 2011).

In Indonesia, more than half of its population has connected to the internet, either form mobile/ smartphones, computers, or other devices (APJII, 2018). The internet penetration is equally prominent in both urban and rural areas, disproving conception that only urban people are connected to the internet. As Indonesia has entered the era of 'bonus demographic' since 2012, it is natural that younger generation from 15 to 34 years old dominate the web (APJII, 2018)

Among SMEs players, 74,9% of them have already connected to the internet, although the usage is unclear whether it is for personal or business-related (APJII, 2018). Consistent with the findings from other developing countries, internet usage in Indonesia is fulfilled by smartphone. Of those who are connected to the internet, 93.9% uses smartphone everyday while 62.7% of them claimed that they never use any personal computers. Moreover, nearly all of the connected citizens use prepaid internet plans to connect to the internet (APJII, 2018), thus their usage are limited by the plans' quota.

Messaging services and social media applications are the most prominent services used by the connected citizens, which account for 43,6% of their internet usage. The Indonesian people also cite that aside from using the internet for communications and social media, they mainly use the internet for leisure purposes to fill in the idle times (APJII, 2018, We are Social, 2020). Informational, business, and banking purposes are ranked lower in significance. Nevertheless, when it comes for acquiring internet services, most Indonesians are not budget-conscious, opting for more expensive state-owned internet service provider, due to its access availability (APJII, 2018).

### Internet Usage of MSMEs

Internet usage has been linked to business competitive advantage, particularly because it helps MSMEs to utilize their limited resources better (Celuch & Murphy, 2010). In general, MSMEs in information society already have the intention to adopt ICT regardless of how many years they have been established (Tan et al., 2010). Their intention is partly fueled by perceived benefit of gaining market information, for instance acquiring data on customers, suppliers, competitors, and regulations that might influence current and future consumers' needs (Caniëls, Lenaerts, & Gelderman, 2015). The information-gathering activities, conceptualized as market orientation, influence whether or not the firms eventually adopt the internet. Orientation toward market is also shown to have effect on internet adoption of small firms (Fillis & Wagner, 2005)



Internet usage among MSMEs primarily concerns in two domain: communication and transactions. Internet links MSMEs with both customers and suppliers, which enable them to gather crucial data regarding market and transaction (Murphy, Celuch & Callaway, 2007). Research show that large percentage of MSMEs tend to favour communications-related activities, such as product marketing or customer-relationship management, than transactional-related activities such as automating business transactions (Adam & Deans, 2011, Harrigan et al., 2014). While MSMEs tend to view transactions-related activities as routine, administrative task (Celuch & Murphy, 2010, Mazzarol, 2015), they perceive communications as activities that can increase their market share, improve their brand image, and lead to higher profit (Mazzarol, 2015).

Concurrently, communications-related internet activities among MSMEs are linked to benefit such as facilitating better and faster communication with customers and suppliers, increase access to market knowledge, creating new business opportunities, and creating new ways of managing business (Tan et al., 2010). Evidently, the use of internet among MSMEs can reduce their transaction cost significantly, mainly because internet bypass intermediaries that MSMEs typically use to transact with their customers or suppliers outside of their geographical areas (Lohrke, Franklin, & Frownfelte-Lohrke, 2006).

Some small business compensate the size of their firms by cleverly utilizing communication technologies to achieve greater strategic objectives, even using it to facilitate information exchange with foreign suppliers and customers around the world (Knight & Cavusgil, 2005). Correspondingly, MSMEs who engage in communications-activities through the internet, are found to have higher degree of strategic flexibility or ability to respond to fluctuating market situations, an important determinant of the firm's advancement in the long run (Celuch & Murphy, 2010). Internet usage among small businesses are also found to have positive impacts on organizational growth, and higher investment on the technology will result in higher growth rate (Davis & Havrveston, 2000).

### Defining Internet Skills

Today, scholars have generally moved beyond describing internet skills as the ability to perform internet-related, computational task. Van Dijk and van Deursen's study (2014) defined internet skills as digital skills that are specifically applied within context of the internet, to reap maximum benefit from the technology. Internet skills are described within two frameworks of medium and content-related skills. The first type relates to the basic skillsets to operate the internet, while content-related skills refer to the contextual skills needed to comprehend information within the internet (van Dijk & van Deursen, 2014, van Deursen, van Dijk, & Peters, 2012).

Within medium-related skills, van Dijk and van Deursen (2014) conceptualized operational and formal skills, which are akin to technical competence. Meanwhile, content-related skills consist of information, communications, content-creation, and strategic skills. The two frameworks of skills are sequential and conditional in nature,



with content-related skills depend on mastery of medium-related skills (van Deursen & van Dijk, 2011). The importance of content-related skills is stressed by van Deursen and van Dijk (2011), who went so far to argue that mastery of these skills can determine one's position in labor market and social life. However, since the skills strongly depend on one's inherent ability to comprehend information, content-related skills are far more difficult to measure compared to medium-related skills (van Dijk & van Deursen, 2014).

Considering the internet usage pattern in developing countries, we need to adapt the internet skills with regard to mobile usage. Medium-related skills should be adapted to basic technical competence to operate the internet via mobile phones. Meanwhile, content-related skills should be defined as skillsets to comprehend information from various applications in mobile phones, from social media, mobile web browsers, and other applications. Considering that this research studies MSMEs who have already adopted the internet, we can assume that the MSMEs are familiar with medium-related skills.

From the proliferation of literature about internet usage of MSMEs, we find out that small businesses are more likely to engage in communications-related activities. Therefore, this research focuses on content-related skills, which relate to communications-related activities described in literature. As previous literature stressed the importance of having strategic objective to attain business goals, we have decided to separate and reconceptualize the strategic skills of van Dijk and van Deursen (2014) from the rest of content-related skills, and apply it in business context. The following section will elaborate on the skills we intend to measure.

### *Strategic Skills*

Van Dijk (2005) described strategic skills as the ability to use the internet to reach one's goals and improve one's standing in the society. It is deemed as the most advanced skill among all of the internet skills. Strategic skills are related to goal orientation and the ability to follow through the goal with courses of actions (Van Dijk & van Deursen, 2014), it is related to the ability to make "informed choices about obtained information and communication by using sufficient reflection and reasoning" (van Laar et al., 2020, p.3).

In business setting, strategy is the quintessential driver of organizational performance. It entails how the company positions themselves among their competitors, in relation to their products and markets (Knight & Cavusgil, 2005). Business strategy is defined into four aspects: integrative, intensive, diversification, and others. Among the aspects two of them relate to the aforementioned internet usage of MSMEs: intensive, described as strategy to improve product position and expand the market, and diversification, the strategy to launch new products in the same or another market (López Salazar, Contreras Soto, & Espinosa Mosqueda, 2012). Given that internet strategic skills correlate with goal orientation, in business setting it can be translated as market orientation, or the extent to which firms position themselves toward its market by utilizing the internet.

We argue that the sequence of the internet skills among MSMEs players in developing country is different compared to those in developed countries, as shown in previous study (Van Deursen, van Dijk, & Peters, 2012, van Deursen & van Dijk, 2015)



we conclude that strategic skills among MSMEs players are akin with strategy formulation in business setting, in the sense that MSMEs players use and utilize the internet with orientation toward improving their position in the market, through obtaining information and communicating with their customers or suppliers. As such, obtaining the skills becomes precondition to the other skills such as content-related skills.

H1 : Strategic skills (higher) are associated with (higher) content-related skills through (H1a) information skills, (H1b) communication skills, (H1c) and content-creation skills, and associated with (H1d) internet usage, as well as business competitiveness through (H1e) strategic flexibility, and (H1f) organizational growth.

### *Content-related Skills*

Given that it mostly concerns about information and communication, content-related skills correlate with the actual internet usage of MSMEs according to literature. Content-related skills consist of *information skills*, or the ability to fulfil one's information needs by searching, processing, selecting and evaluating the information from the internet (van Deursen, van Dijk, & Peters, 2011, van Dijk & van Deursen, 2014). Considering that information on the internet is vast and abundance, possessing information skills is necessary in order to make informed judgement to fulfil one's objectives. The next skill is *communication skills*, defined as exchange of message with one's contacts through the internet. The process involves constructing and decoding meaning, and the ability to comprehend meaning disseminated through all internet-based interactive applications. The skills also involve the competence to present oneself through online profile, and the ability to construct message that attract attention online (van Dijk & van Deursen, 2014). For business players, van Dijk and van Deursen (2014) also note that they might need negotiation ability to conduct online communication with their stakeholders. At last, there is also *content-creation skill*, or the competence to produce contents of acceptable quality to be published on the internet. This ranges from creating online post, website information, graphic, or video. The skill mastery depends on the level of attractiveness or quality of the content itself, and whether the content serve the intended goal of the producer (van Dijk and van Deursen, 2014).

H2: Information skills (higher) are associated with (higher) communication skills (H2a), internet usage (H2b), and business competitiveness through (H2c) strategic flexibility, and (H2d) organizational growth.

H3: Communication skills are associated with (higher) content-creation skills (H3a), internet usage (H3b) and business competitiveness through (H4c) strategic flexibility, and (H4d) organizational growth.





H4: Content-creation skills are associated with (higher) internet usage (H5a) and business competitiveness through (H5b) strategic flexibility, and (H5c) organizational growth.

### Internet Skills and Internet Usage

In general, internet usage has been defined as the extent to which one uses the internet, mainly through duration, purpose of use, and frequency of use (Siraj et al., 2015, Hargittai & Hinnant, 2008, van Deursen & van Dijk, 2015). Recently, scholars have begun to recognize the role of internet skills in predicting internet usage (van Deursen & van Dijk, 2015, Fisher & Bendas-Jacob, 2006, Hargittai & Hinnant, 2008). Internet skills are thought to be important antecedent of internet adoption and subsequently, usage. In the information society, those who do not possess internet skills run the risk to be marginalized in society (van Dijk & van Deursen, 2014).

Van Deursen & van Dijk (2015) found that the varying degree of internet skills one possess, explain their usage diversity. In particular, people who reported having better skills in using and navigating the internet, tend to engage more in capital-enhancing online activities (Hargittai & Hinnant, 2008). This reveals that individuals 'use of the internet partly mirrors one's abilities. Much like the individual usage, the differing use of internet among small businesses could contribute to knowledge gap whereby businesses that are more internet savvy, use more and different activities, thus obtain more benefits compared to businesses who do not (Arendt, 2008). Among other things the differing use of internet among small business is attributed to the managers' characteristics, the person who are in charge in key business activities (Alam, 2009, Arendt, 2008, Fillis & Wagner, 2015). In particular, managers who are skilled in computers usher in faster internet adoption within the firms. Their individual internet experience also correlates with higher internet usage within the small businesses (Alam, 2009).

However, van Deursen & van Dijk (2015) also noted that while having the skills prompt people to use the internet more, there is a tendency for skilled people to use the same applications repeatedly, resulting in less usage diversity. Consequently, they need external driver that forces them to use various applications, such as new job, school assignment, or training membership. In business setting, this external driver could be the firms' orientation or objectives that translates to firms ' activities, forcing the firms 'key people to use various internet application irrespective of their internal preference.

H5: Internet usage (higher) are associated with (higher) business competitiveness through (H6b) strategic flexibility, and (H6c) organizational growth.

### Business Competitiveness



Business competitiveness is described as the firm's capability to produce and market products that are more attractive to their competitors (López Salazar, Contreras Soto, & Espinosa Mosqueda, 2012). Porter (2003) argued that a company's competitiveness is inextricably related to the quality of national business environment, whereas a company only thrive when supported by skilled workers, access to information, efficient government regulations, good suppliers, among other things. Correspondingly, deficiencies in critical skills, including ICTs skills, among a company's employees could negatively affect business competitiveness (Addis, 2003).

Business competitiveness also relates to the firm's ability to stay relevant and compete in the industry environment (López Salazar, Contreras Soto, & Espinosa Mosqueda, 2012). In order to stay relevant, it is imperative that business possess the ability anticipate and adapt to changes in industry environment. The ability, conceptualized as *strategic flexibility*, is an important enabler to growth and long term competitive advantage in small businesses, mainly because small businesses possess higher entrepreneurial alertness, as well as faster response and implementation times (Celuch, Murphy, & Callaway, 2007). Strategic flexibility ranges from the firms' ability to proactively anticipate changes in resources, business partnership, market opportunities, environmental conditions, to firm's organizational technology needs (Celuch & Murphy, 2010). As mentioned before, internet usage and capabilities are proven to improve the firms' strategic flexibility (Celuch, Murphy, & Callaway, 2007).

Aside from strategic flexibility, business competitiveness is often measured by organizational growth. This is mostly defined in terms of the company's sales (López Salazar, Contreras Soto, & Espinosa Mosqueda, 2012). The effect of internet usage is shown through the extent to which it drives constant sales, irrelevant of high or low season, and how the key people in the firm perceive their sales compared to their competitors. Another way to define organizational growth is through the extent to which the firm *amplifies itself*. This refers to the effort to widen the range and capacity to grow their personnel, from enlarging the employee numbers to providing education (d'Amboise & Muldowney, 1988).

H6: Business competitiveness is associated with each other, through (higher) strategic flexibility that is associated with (higher) organizational growth.

### Determinants of Internet Usage and Business Competitiveness

Throughout the literature, age, gender and educational level generally account for differences in internet usage (Siraj et al., 2015, Hargittai & Hinnant, 2008, Fisher & Bendas-Jacob, 2006, Zhang, 2005). Recent findings also note that income and internet experience or the length of which individuals have used the internet, determine the internet usage of an individual (van Deursen & van Dijk, 2015, Hargittai & Hinnant, 2008). Pearce and Rice (2017) even went as far as describing

that socioeconomic status of individuals determine whether they access capital-enhancing sites or entertainment sites.



The role of age, gender, and internet experience are explained in Unified Theory of Acceptance and Use of Technology (Venkatesh & Zhang, 2010). In particular, the theory predicts that younger males tend to be interested to use technology when they perceive the benefit to exceed the downside. For older female, social influence is the most important determinant. However, although younger male tend to use the internet more than female, they are more likely to engage in entertainment-based website (Joiner et al., 2005) did not find any significant differences in regard to communication use of the internet, which means both male and female use internet for communication is relatively the same way.

In relation to small business, study has shown that the age and educational level of small business' founders or manager contribute to the differing use of internet in their firm's business practice (Kusumaningtyas & Suwanto, 2014). As mentioned before, internet has been shown to be significant predictors in a number of literatures pertaining to business performance or concepts related to business competitiveness. Evidently, some aspects of business competitiveness are contingent to the owner or manager's age and formal education (Davis & Haverston, 2000, Halabi & Lussier, 2014). Aging owner or manager are thought to suppress a firm's growth, as they are less flexible as their younger counterpart. Concurrently, owner or manager with higher degree of education level are more likely to bring their firm toward success.

Since businesses with more working capital are more likely to succeed (Halabi & Lussier, 2014), one tends to deduce that larger firms are more likely to achieve better business competitiveness. Based on the elaborated moderating variables above, we construct the hypothesis as follow:

H7 : Owner / manager gender (male) are associated with (higher) strategic skills (H7a), content-related skills through (H7b) information skills, (H7c) communication skills, (H7d) and content-creation skills, and associated with (H7e) internet usage, as well as business competitiveness through (H7f) strategic flexibility, and (H7g) organizational growth.

H8 : Owner / manager age (younger) are associated with (higher) strategic skills (H8a), content-related skills through (H8b) information skills, (H8c) communication skills, (H8d) and content-creation skills, and associated with (H8e) internet usage, as well as business competitiveness through (H8f) strategic flexibility, and (H8g) organizational growth.

H9: Owner / manager internet experience (longer) are associated with (higher) strategic skills (H9a), content-related skills through (H9b) information skills, (H9c) communication skills, (H9d) and content-creation skills, and associated with (H9e) internet usage, as well as business competitiveness through (H9f) strategic flexibility, and (H7g) organizational growth.

H10: Size of firm (larger) are associated with (higher) strategic skills (H10a), content-related skills through (H10b) information skills, (H10c) communication skills, (H10d) and content-creation skills, and associated with (H10e) internet usage, as well as business competitiveness through (H10f) strategic flexibility, and (H10g) organizational growth



H11 : Firm revenue (larger) are associated with (higher) strategic skills (H11a), content-related skills through (H11b) information skills, (H11c) communication skills, (H11d) and content-creation skills, and associated with (H11e) internet usage, as well as business competitiveness through (H11f) strategic flexibility, and (H11g) organizational growth.

H12: Firm age (older) are associated with (higher) strategic skills (H12a), content-related skills through (H12b) information skills, (H12c) communication skills, (H12d) and content-creation skills, and associated with (H12e) internet usage, as well as business competitiveness through (H12f) strategic flexibility, and (H12g) organizational growth.

### 3 Methodology

#### Method

Typically, measuring internet skills have been done with survey, performance test, or a combination of both (Van Deursen, van Dijk, & Peters, 2011, van Deursen, van Dijk & Peters, 2012, Hargittai & Hinnant, 2008, Hargittai, Piper, & Morris, 2019, Bond, 2003). Focus group discussion has also been employed to measure internet skill access (Yuldinawati, van Deursen, & van Dijk, 2018). However, this study is not interested in measuring individual abilities in performing internet-related task, hence performance test is out of the question. Survey is deemed as the most suitable measurements to gauge the extent to which Indonesian MSMEs use internet skills in their daily business activities. Snowball sampling is used because in Indonesia, MSMEs are often not formally registered in the government database although conducting economic activities in certain location (BPS, 2020), hence mostly belong to “informal” sector (Singh, Reynold, & Muhammad, 2001). Therefore, to reach the MSMEs, we have to approach communities and/or individual MSMEs and ask them to spread the questionnaires.

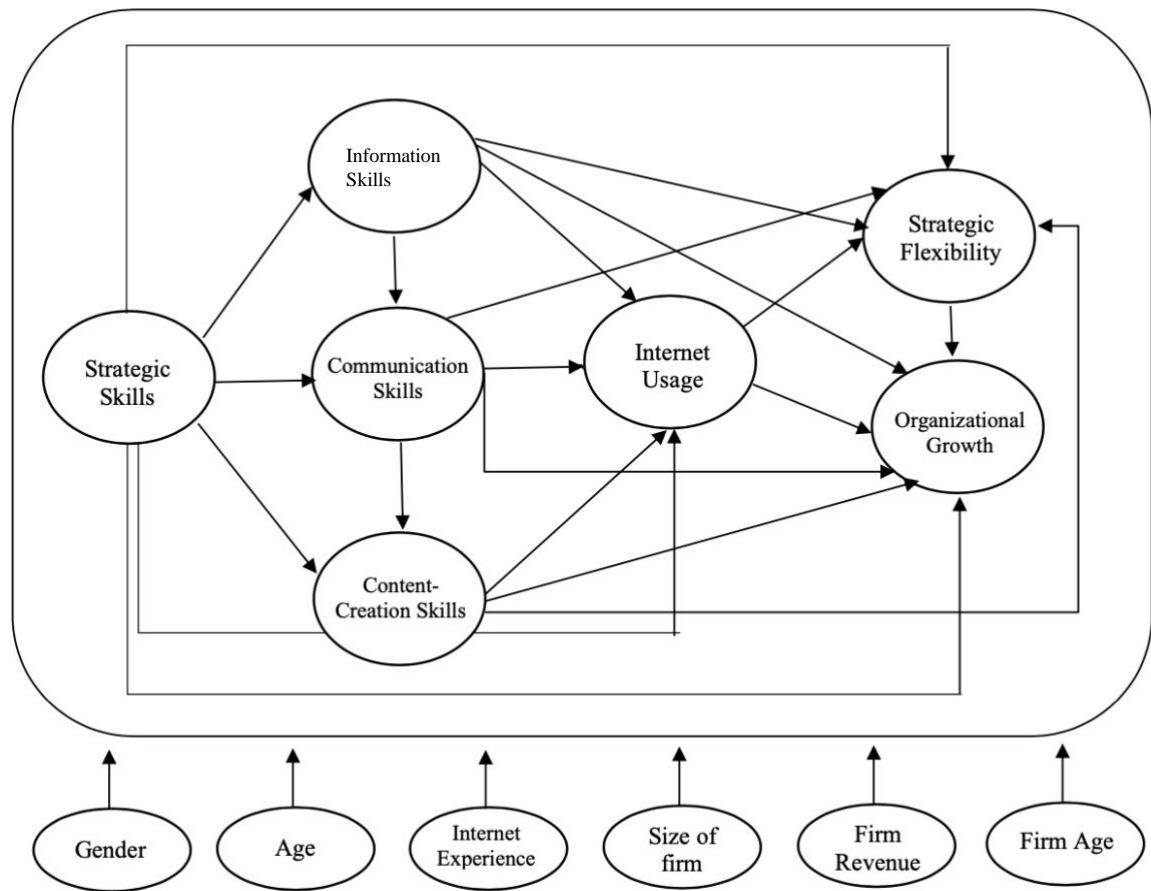
Consistent with Celuch and Murphy (2010), we also focus on measuring the opinion of top managers about their firms. It is assumed that because they are the decision-maker, they are able to correctly define the situation of their organization. This decision also corresponds with previous findings about the influence of managers in determining internet usage in small business (Kusumaningtyas & Suwanto, 2014, Alam 2009)

As there are differences in defining MSMEs terms, we have decided to comply with Indonesian Central Bureau of Statistic definition, that is MSMEs are micro, small, and medium enterprises outside of agriculture sector. Based on the document of Badan Kebijakan Fiskal (Fiscal Policy Agency), Ministry of Finance (2012):

- Micro enterprise is defined as an enterprise with less than 5 employees and whose annual sales do not exceed Rp 300,000,000 (three hundred million rupiah) and/or whose net assets do not exceed Rp 50,000,000 (fifty million rupiah)
- Small enterprise is defined as an enterprise with around 5 to 19 employees and whose annual sales do not exceed Rp 2,500,000,000 (two billion five hundred million rupiah), and/or whose net assets do not exceed Rp 500,000,000 (five hundred million rupiah).



- Medium enterprise is defined as an enterprise with around 20 to 99 employees and whose annual sales do not exceed Rp 50,000,000,000 (fifty billion rupiah) and/or whose net assets do not exceed Rp 10,000,000,000 (ten billion rupiah). As of the areas, we modified categorization of Indonesian Central Bureau of Statistics in eight categories: (a) self-owning mining, (b) small-scale industry and household handicrafts, (c) private power companies, (d) individual construction activities, (e) trade, restaurants and accommodation services, (f) transportation and storage, and communication activities, (g) savings and loans companies without official identity, usurer, insurance that supports companies and individual-run money exchanges, (h) and other services enterprise (BPS, 2020). We will refer to the definition when constructing questionnaires. The following model illustrate this research:



**Figure 1.** Proposed Model of Internet Skills for Small Business Competitiveness

### Measures

Corresponding with the model proposed in the previous section, the questionnaire consists of operational measures of internet skills, internet usage, and business competitiveness. Prior to questionnaire distribution, we conducted pretest with 6 managers of MSMEs in Indonesia to test the scales. Amendments of the survey were made after feedback from the respondents.

The internet skills are assessed using van Deursen, van Dijk, and Peters' (2012) measures of internet skills, adapted to the use of internet among MSMEs in developing country. However, we separate strategic skills from content-related skills to adapt to measures to strategic aspects of business. We added one item based on van Laar et al.(2020) operationalization of critical thinking. For the strategic aspects of business, we include several items, modified from López Salazar, Contreras Soto, & Espinosa Mosqueda (2012). Sample statements included " I often make plan to achieve better product position on the market using the internet or mobile applications". After one item was deleted, the strategic skill scale is proven to be highly reliable ( $\alpha = 0.8505$ ).



Similarly, the measures for information skills is proven to be reliable after one item was deleted ( $\alpha = 0.782$ ).

Survey instruments of van Deursen, van Dijk, and Peters (2012) did not include content-related skills. Therefore, we added the items with van Dijk and van Deursen's (2014) conceptualizations of communications and content-creation skills. Sample items included "I normally search for information I need using the internet or mobile applications" for information skills, and "I often understand the message that I receive from other people on the internet or other mobile applications" for communication skills, which proven to be reliable after two items were deleted ( $\alpha = 0.738$ ). For the content-creation skills, we also include statements from Hargittai & Walejko (2008). The self-constructed scale is proven to be reliable without any deletion ( $\alpha = 0.797$ ).

Meanwhile, for the internet usage, we measure it by the frequency of engaging in 10 activities, ranging from never to always (van Deursen, van Dijk, and Peters, 2015). The 10 activities were later divided into recreational-use or capital-enhancing use (Hargittai & Hinnant, 2008).

As mentioned before, business competitiveness is measured by strategic flexibility and organizational growth. Strategic flexibility is derived from operationalization of Murphy, Celuch, and Callaway (2007), and the items are modified from Celuch, Murphy, and Callaway (2007) to a certain extent. As we put emphasis in internet skill rather than strategic flexibility, we do not measure strategic flexibility in proactive or reactive manner. Rather, we use five-point scale ranging from very slow to very fast, denoting to the adaptability rate of the firm. The measures are proven highly reliable, without any item deletion ( $\alpha = 0.869$ ).

At last, for organizational growth we measure sales growth (López Salazar, Contreras Soto, & Espinosa Mosqueda, 2012) and amplification (d'Amboise & Muldowney, 1988) in relation to the firms' competitor, as perceived by the manager. Initially, we self-constructed sales growth with three items, and amplification with two items. However, upon analysis, one item from amplification construct needed to be deleted for the scale to be reliable ( $\alpha = 0.759$ ). The measure uses five-point Likert agreement scale. All of the items in the questionnaire are translated into Indonesian language to avoid confusion with the respondents.

### Samples

We distributed survey questionnaires to 300 respondents using Snowball Sampling Method, using the aforementioned criteria of Indonesian MSMEs. We purposely approached several MSMEs communities through key opinion leaders, social media, and associations for instance UMKM Lampung (Association of MSMEs in Lampung), Sahabat UMKM (Best Friend of MSMEs), UMKM Kita Bisa (MSMEs community), Platform Usaha Sosial (Platform of Social Entrepreneurs), and MSMEs group alumni of several private universities in Indonesia.



Characteristics	N	%
<b>Gender</b>		
Male	50	36.8
Female	86	63.2
<b>(Owner / Manager) Age</b>		
19 – 29 years old	82	61.2
30 – 39 years old	20	14.9
40 – 49 years old	21	15.7
50 – 59 years old	10	7.5
Above > 60 years old	1	0.7
<b>Education</b>		
< High school	11	8.2
High school / vocational school	17	12.7
Bachelor's degree	85	63.4
Master's degree	21	15.7
<b>Internet Experience</b>		
0 – 6 months	13	9.7
6 months – 1 year	12	9.0
1 – 3 years	22	16.4
> 3 years	87	64.9

**Table 1. Demographic Profile**

From the respondents approached, 192 owner or manager replied (64% response rate) and 136 fully completed the test (70.8% completion rate). Due to purposive sampling, the sample is not representative of all the MSMEs in Indonesia. However, this was not required as we aim to test the relationship between variables using deductive reasoning. In general, the respondents primarily fall under Micro Enterprise category, accounting for the number of employees and firm revenue. In addition, most of the enterprises have run their business for 1 to 3 years. Younger owner or manager dominates the respondent samples, with most of them aged 19 to 29 years old.

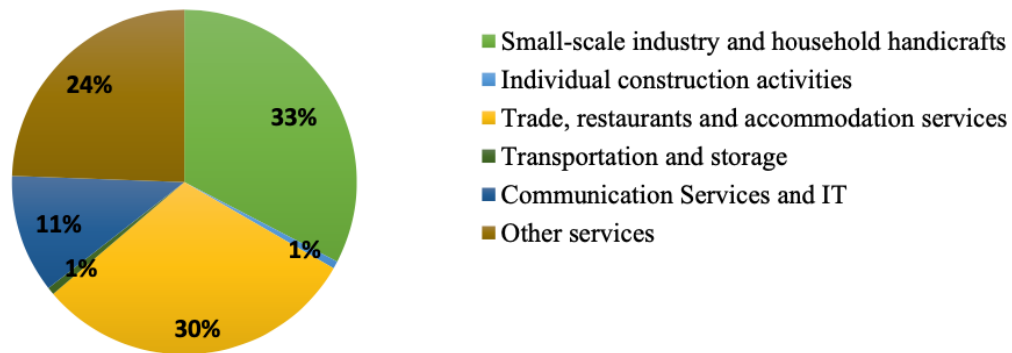




Business Profiles	N	%
<b>Size of Firm</b>		
0 – 4 employees	108	80.6
5 – 19 employees	16	11.9
20 – 99 employees	10	7.5
<b>Firm Revenue</b>		
0 – 300 million rupiah	111	82.8
300 million – 2.5 billion rupiah	16	11.9
2.5 billion – 50 billion rupiah	7	15.2
<b>Firm Age</b>		
< 6 months	33	24.4
6 months – 1 year	17	12.6
1 – 3 years	46	34.1
>3 years	39	28.9

**Table 2.** Respondents' Business Profile

## Distribution of MSMEs



**Figure 2.** Distribution of MSMEs Respondents

## 4 Results

As the model is complex and does not follow conventional multivariate analysis, we use component-based Structural Equation Modelling, specifically Partial Least Square (PLS-SEM). This analysis allow us to analyse the causal model with interaction effects all at once, and it is more robust in detecting latent variables compared to regression analysis (Naima, Latan, & Narteea, 2018, Hsu, Chen, & Becker, 2015). Before performing PLS-SEM analysis, we tested the goodness of model, resulting in SRMR = 0.08 and Bentler-Bonett Normed Fit Index (NFI)=0.61, which proves relatively good fit. PLS-SEM is particularly useful to deal with small sample size, missing value, and multicollinearity (Pirouz, 2006).



However, we also provide supplementary correlation analysis to see the relationship between the constructs. Using Pearson's correlation in SPSS, we calculate correlation between the variables ( $p = 0.05$ ,  $N = 136$ ). Table 2 provides the summary of the correlations.

		1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Variables</b>														
1	Strategic Skills	–	<b>.69</b>	<b>.53</b>	<b>.36</b>	–	.16	-.06	-.04	.14	.13	-.05	.03	–
2	Information Skills	<b>.69</b>	–	<b>.65</b>	<b>.47</b>	.08	<b>.17</b>	-.08	.17	-.01	.06	-.04	.06	.05
3	Communication Skills	<b>.52</b>	<b>.65</b>	–	<b>.49</b>	<b>.22</b>	<b>.18</b>	.15	.03	.07	<b>.19</b>	.03	.03	.07
4	Content-creation Skills	<b>.36</b>	<b>.47</b>	<b>.49</b>	–	.08	.11	.10	.10	.02	–	–	0.6	.07
5	Internet Usage	–	0.8	<b>.22</b>	.08	–	<b>.30</b>	<b>.29</b>	.10	<b>.32</b>	.13	.07	.02	.10
6	Strategic Flexibility	.15	<b>.17</b>	<b>.18</b>	.11	<b>.30</b>	–	<b>.38</b>	-.04	.06	<b>.18</b>	.02	.06	.11
7	Organizational Growth	-.06	-.01	.15	.10	<b>.29</b>	<b>.38</b>	–	-.02	.05	.11	<b>.23</b>	.16	.16
<b>Determinants</b>														
8	Gender	-.04	-.06	.03	.10	.10	-.04	-.02	–	.04	-.05	<b>-.27</b>	<b>-.34</b>	-.09
9	Age	.14	.06	.07	.02	<b>.32</b>	.06	.05	.04	–	<b>.25</b>	.12	.13	<b>.25</b>
10	Internet Experience	.13	.06	<b>.19</b>	–	.13	<b>.18</b>	.11	-.05	<b>.25</b>	–	<b>.19</b>	<b>.21</b>	<b>.36</b>
11	Size of Firm	-.05	.05	.31	–	.07	.02	<b>.23</b>	<b>-.27</b>	.12	<b>.19</b>	–	<b>.60</b>	<b>.31</b>
12	Firm Revenue	.03	.07	.03	.06	.02	.06	.16	<b>-.34</b>	.13	.21	<b>.60</b>	–	<b>.39</b>
13	Firm Age	–	.06	.07	.07	.10	.11	.16	-.09	<b>.25</b>	<b>.36</b>	<b>.31</b>	<b>.39</b>	–

Note. Significant at  $p < 0.05$ , significant correlations are in bold. Too small values are omitted from the table.

**Table 3.** Correlation Summary of the Model

From the results, we can see that Strategic Skills significantly correlates with Information Skills, Communication Skills, and Content-Creation Skills. It does not show correlation with any of the Business Competitiveness constructs. Meanwhile, Information Skills is shown correlating with Strategic Skills, Communication Skills, Information Skills, and Strategic Flexibility.

The most correlation is observed in Communication Skills, where it shows relationship between Strategic Skills, Information Skills, Content-Creations Skills, Internet Usage, Strategic Flexibility, and Internet Experience. Due to the small correlation values, we process with PES-SEM analysis to analyze the latent variables. As suggested by Falk and Miller (1992), PES-SEM is important to understand the true relationship between latent variables as the effect may be suppressed by the presence of a suppressor. The figure below illustrates the path coefficient between all the variables in the model.

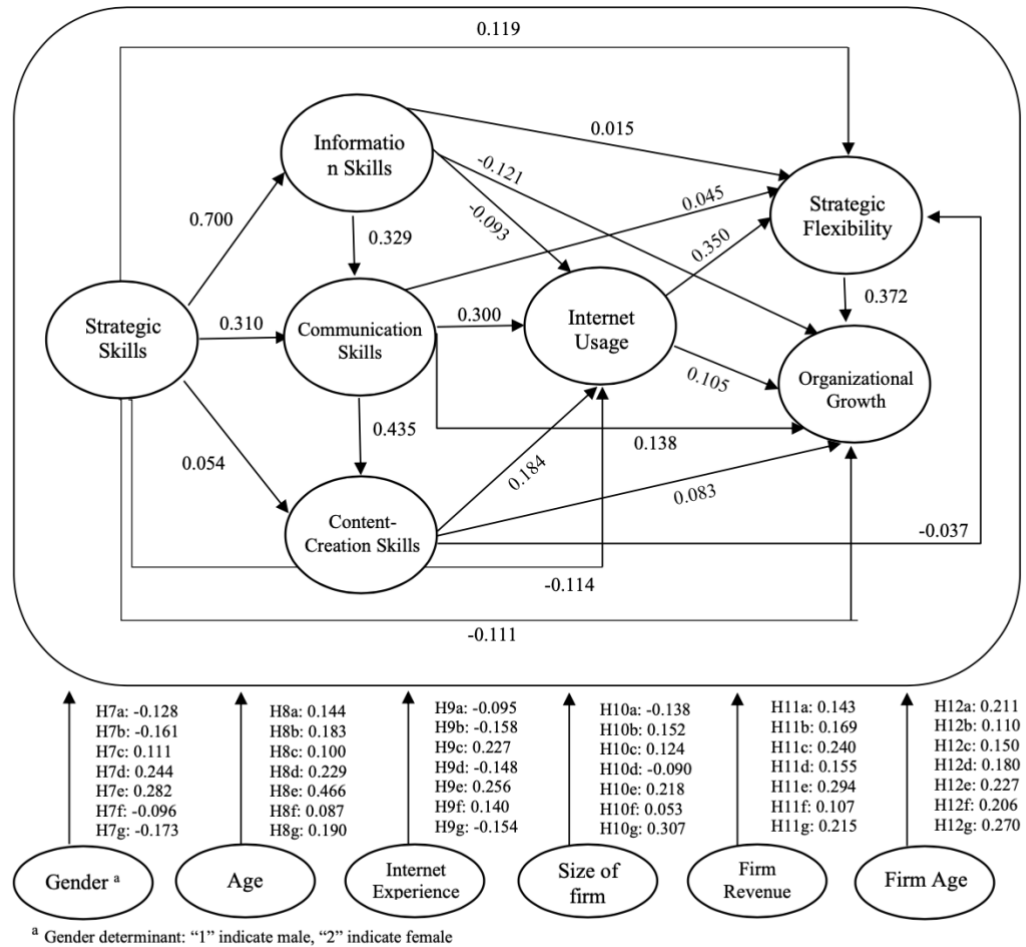


Figure 3. Path Coefficients of the Structural Model

The structural model above shows the significant direct and indirect effects of the variables, which represent reaction to unit change in any of the explanatory variables. A positive coefficient reveals positive association between the determinants, while negative coefficient reveals negative association between the constructs. As observed, some construct shows higher degree of effect, compared to other. In general, all the variables show direct or indirect effect albeit ranging from small to large. This shows that universally, unit increase in the determinant indicates an increase or decrease in the structure, accordance with the size of the coefficient.

According to Suhr (2008), in small sample model, path coefficients with values 0.10 – 0.29 indicates “small” effect, coefficients values 0.30 – 0.49 reflects “medium” effect”, while values greater than 0.50 indicates “large” effects. In general, nearly all of the hypotheses are supported, predominantly the third hypotheses, with Communication Skills will lead to direct increase in Content-creation Skills, Internet Usage, Strategic Flexibility, and Organizational Growth, proportional to the amount of the coefficient. Hypotheses pertaining to Strategic Skills are also partially supported, with the increase of Strategic Skills directly affect Information Skills, Communication



Skill, Content-creation Skills, and Strategic Flexibility for a small business. The table below summarize the hypotheses results.

### Hypotheses Results

Hypotheses	Direct Effects $\beta$	Indirect Effect $\beta$	Total Effect $\beta$	Effect Strength
H1a Strategic Skills → Information Skills	.700**	–	.700	Large
H1b Strategic Skills → Communication Skills	.310**	.231	.541	Medium
H1c Strategic Skills → Content-creation skills	.054	.336**	.390	Medium
H1d Strategic Skills → Internet Usage	-.114	.169	.055	–
H1e Strategic Skills → Strategic Flexibility	.119	.040	.159	Weak
H1f Strategic Skills → Organizational Growth	-.111	.087	-.024	–
H2a Information Skills → Communication Skills	.329	–	.329	Medium
H2b Information Skills → Internet Usage	-.093	.152	.059	–
H2c Information Skills → Strategic Flexibility	.015	.025	.040	–
H2d Information Skills → Organizational Growth	-.121	.090	.031	–
H3a Communication Skills → Content-creation skills	.435**	–	.435	Medium
H3b Communication Skills → Internet Usage	.300**	.080	.380	Medium
H3c Communication Skills → Strategic Flexibility	.045	.117	.162	Weak
H3d Communication Skills → Organizational Growth	.138	.136**	.274	Weak
H4a Content-creation skills → Internet Usage	.184	–	.184	Weak
H4b Content-creation skills → Strategic Flexibility	-.037	.065	.028	–
H4c Content-creation skills → Organizational Growth	.083	.030	.113	–
H5a Internet Usage → Strategic Flexibility	.350**	–	.350	Medium
H5b Internet Usage → Organizational Growth	.105	.130**	.235	Weak
H6 Strategic Flexibility → Organizational Growth	.372**	–	.372	Medium

Note. Effect strength account for Total Effects, \*\*significant for  $p < 0.05$

**Table 4.** Hypotheses Results of Structural Model

Exception to the supported hypotheses includes the relationship of Strategic Skills on Internet Usage (H1d) and Organizational Growth (H1f), as well as the effect of Information Skills on Internet Usage (H2b), Strategic Flexibility (H2c), and Organizational Growth (H2d). Moreover, effect of Content-creation Skills on Strategic Flexibility (H4b) and Organizational Growth (H4d) are also not proven. Simultaneously, Information Skills and Content-creation skills are shown to be the least effective among all the Internet Skills, with both having no effect on all aspects of Business Competitiveness, that is Strategic Flexibility and Organizational Growth.

For the structural model, we purposely include all of the effect, albeit weak and are not shown to be significant according to  $p$  values. It is because statistical significance is not equivalent to economic significance. According to The American Statistical Association (ASA), smaller  $p$  values do not automatically infer the presence of larger or more important effect and vice versa, although it is heavily overused in scientific journal (Wasserstein & Lazar, 2016). To interpret  $p$ -values, we also have to consider its sample size and meaningful effect size (Betensky, 2019). For that reason, we decided to include all of the effects, to show the extent to which many types of Internet Skills account for small business competitiveness, however small the effects may be. We deem it is necessary to give holistic view of the Internet



Skills in a developing country. More on this matter will be addressed separately in the limitations section.

This argument is proven when we conducted follow up Multiple Regression test using SPSS on the types of Internet Skills using the meditating variables of Internet Usage. All of the types of Internet Skills proved to be statistically significant. In addition, Capital-enhancing Usage is shown to be the significant contributing predictor of Internet Usage. No Recreational Usage is proven significant for any of the target variables.

Specific Indirect Effects	<i>p</i> values	R <sup>2</sup>
Strategic Skills → Internet Usage → Strategic Flexibility	.000	.161
Recreational Internet Usage <sup>c</sup>	.208	–
Capital-enhancing Internet Usage <sup>c</sup>	.000	–
Strategic Skills → Internet Usage → Organizational Growth	.001	.129
Recreational Internet Usage	.172	–
Capital-enhancing Internet Usage	.000	–
Information Skills → Internet Usage → Strategic Flexibility	.000	.160
Recreational Internet Usage	.288	–
Capital-enhancing Internet Usage	.000	–
Information Skills → Internet Usage → Organizational Growth	.000	.151
Recreational Internet Usage	.348	–
Capital-enhancing Internet Usage	.000	–
Communication Skills → Internet Usage → Strategic Flexibility	.000	.139
Recreational Internet Usage	.212	–
Capital-enhancing Internet Usage	.000	–
Communication Skills → Internet Usage → Organizational Growth	.002	.115
Recreational Internet Usage	.137	–
Capital-enhancing Internet Usage	.000	–
Content-creation Skills → Internet Usage → Strategic Flexibility	.001	.143
Recreational Internet Usage	.231	–
Capital-enhancing Internet Usage	.000	–
Content-creation Skills → Internet Usage → Organizational Growth	.002	.115
Recreational Internet Usage	.112	–
Capital-enhancing Internet Usage	.000	–

<sup>c</sup> Predictors of Internet Usage, significant for  $p < 0.05$

**Table 5.** Indirect Effects of Internet Skills

However, when we use the modified sequence of Internet Skills as suggested by Van Deursen and Van Dijk (2015), the effects seem to decrease significantly. For instance, the sequential indirect effect of Strategic Skills → Information Skills → Communication Skills → Content-Creation Skills → Internet Usage is 0.018. Meanwhile, the consecutive indirect effect of Strategy Skills → Information Skills → Communication Skills → Content-Creation Skills → Internet Usage → Organizational Growth is 0.002. Lastly, the orderly indirect effect of Strategic Skills



→ Information Skills → Communication Skills → Content-Creation Skills → Internet Usage → Strategic Flexibility is 0.006.

Hypotheses	Direct Effects $\beta$	Indirect Effect $\beta$	Total Effect $\beta$	Effect Strength	
H7a	Gender <sup>b</sup> → Strategic Skills	-.128	–	-.128	Weak
H7b	Gender → Information Skills	-.161	–	-.161	Weak
H7c	Gender → Communication Skills	.111	–	.111	Weak
H7d	Gender → Content-Creation Skills	.244	–	.244	Weak
H7e	Gender → Internet Usage	.282	–	.282	Weak
H7f	Gender → Strategic Flexibility	-.096	–	-.096	–
H7g	Gender → Organizational Growth	-.173	–	-.173	Weak
H8a	(Owner / Manager) Age → Strategic Skills	.144	–	.144	Weak
H8b	(Owner / Manager) Age → Information Skills	.183	–	.183	Weak
H8c	(Owner / Manager) Age → Communication Skills	.100	–	.100	Weak
H8d	(Owner / Manager) Age → Content-Creation Skills	.229	–	.229	Weak
H8e	(Owner / Manager) Age → Internet Usage	.466**	–	.466**	Medium
H8f	(Owner / Manager) Age → Strategic Flexibility	.087	–	.087	–
H8g	(Owner / Manager) Age → Organizational Growth	.190	–	.190	Weak
H9a	Internet Experience → Strategic Skills	.155	–	.155	Weak
H9b	Internet Experience → Information Skills	.125	–	.125	Weak
H9c	Internet Experience → Communication Skills	.201	–	.201	Weak
H9d	Internet Experience → Content-Creation Skills	-.148	–	-.148	Weak
H9e	Internet Experience → Internet Usage	.259**	–	.259**	Weak
H9f	Internet Experience → Strategic Flexibility	.177**	–	.177**	Weak
H9g	Internet Experience → Organizational Growth	.165**	–	.165**	Weak
H10a	Size of Firm → Strategic Skills	-.138	–	-.138	Weak
H10b	Size of Firm → Information Skills	.152	–	.152	Weak
H10c	Size of Firm → Communication Skills	.124	–	.124	Weak
H10d	Size of Firm → Content-Creation Skills	-.090	–	-.090	–
H10e	Size of Firm → Internet Usage	.218	–	.218	Weak
H10f	Size of Firm → Strategic Flexibility	.053	–	.053	–
H10g	Size of Firm → Organizational Growth	.307**	–	.307**	Medium
H11a	Firm Revenue → Strategic Skills	.143	–	.143	Weak
H11b	Firm Revenue → Information Skills	.169	–	.169	Weak
H11c	Firm Revenue → Communication Skills	.240	–	.240	Weak
H11d	Firm Revenue → Content-Creation Skills	.155	–	.155	Weak
H11e	Firm Revenue → Internet Usage	.294	–	.294	Weak
H11f	Firm Revenue → Strategic Flexibility	.107	–	.107	Weak
H11g	Firm Revenue → Organizational Growth	.215**	–	.215**	Weak
H12a	Firm Age → Strategic Skills	.211	–	.211	Weak
H12b	Firm Age → Information Skills	.110	–	.110	Weak
H12c	Firm Age → Communication Skills	.150	–	.150	Weak
H12d	Firm Age → Content-Creation Skills	.180	–	.180	Weak
H12e	Firm Age → Internet Usage	.227	–	.227	Weak
H12f	Firm Age → Strategic Flexibility	.206	–	.206	Weak
H12g	Firm Age → Organizational Growth	.270**	–	.270**	Weak

<sup>b</sup> Gender determinant: "1" indicate male, "2" indicate female

Note. Effect strength account for Total Effects, \*\*significant for  $p < 0.05$

**Table 6.** Hypotheses Results of Determinants



Table 6 indicates that most of the hypotheses pertaining effects of the determinants to structural model are supported. The dominant effects are owner or manager's age to Internet Usage, Size of Firm to Organizational Growth, Firm Age to Organizational Growth, and Internet Experience to Internet Usage, in respective order. There are no indirect effects observed, suggesting that all effects are attributed to direct effects only, proportional to their size coefficient. Most of the effects are weak, with few significant effect observed in owner or manager's age, Internet Experience, Size of Firm, Firm Revenue, and Firm Age. As per the argument stated above, the weak effects are still reported to see the extent to which the determinants affect the structural model.

Interestingly, there is differing effect of gender to the types of Internet Skills and Business Competitiveness constructs, despite the weakness of strength. In general, male tend to have higher level of Strategic Skills and Information Skills compared to female. Gender also affect business competitiveness in terms of Organizational Growth, with male founder or manager have larger effect compared to female. On the contrary, female have better Internet Skills in Communication Skills and Content-creation Skills. Their internet Usage is also larger than their male peers.

The hypotheses are rejected in terms of the owner or manager's age. Previously, we argued that younger owner or manager have greater Internet Skills in general, thus affecting their business competitiveness in terms of Strategic Flexibility and Organizational Growth. Instead, older owner or managers are more inclined to have larger Internet Skills in all the types. The effects are shown to be dominant in Internet Usage, indicating an increase in age equals increase in Internet Skills and business competitiveness, particularly Organization Growth. Another interesting finding is that the Size of Firms does not have effect on Strategic, which means there would be no increase in Strategic Flexibility if there the firm gets larger. The effect of Size of Firm on Strategic Skills also has negative coefficient, which means that smaller firm tend to have greater Strategic Skills compared to larger firms. Internet Experience contributions on Content-creation Skills are also shown to have negative coefficient, indicating less experience will lead to larger Content-creation Skills.

Since nearly all of the determinants have effects on the target variables, we can conclude that any increase in the determinant values will lead to increase in all types of Internet Skills and Business Competitiveness. Aside form gender determinant and the negative coefficient stated before, we can infer that most of the effects positively contributes to most aspects of Internet Skills and Business Competitiveness.

## Discussion

The study investigates the model of Internet Skills that can increase small business competitiveness and how do the extend to which are associated with internet usage and business competitiveness. The model of Internet Skills is modified from the research of van Deursen and van Dijk (2015), with the main difference is Strategic Skills precedes the other types of Internet Skills, which is ordered according to van Deursen and van Dijk (2015)'s sequences. To test the model relationship, we sampled 136 owners or



managers of MSMEs in Indonesia. Most of the respondents are Micro Enterprises, with young owner or managers dominate the sample.

Our model of Internet Skill is adapted to the unique internet use among MSMEs in developing countries, for which mobile connectivity dominates the internet use (Khan et al., 2010, Ochara & Mawela, 2014). As such, when we construct the measures, we add “mobile applications” in every of the question, thus reducing the chance of misunderstanding among respondents, as observed in previous study (Yuldinawati, van Deursen, & van Dijk, 2018). Particularly, we reject the notion that physical access of personal computers contributes to greater Internet Skills compared to mobile connection, due to the latter having easier to use interface (van Dijk & can Deursen, 2014). As the use of internet in developing countries are unique, we argue that in time, citizens of developing countries develop fairly different Internet Skills to citizens in developed countries, proportional to their use of mobile technology. This is proven by Internet Skills results of the study that indicates citizens, particularly MSMEs in developing countries, do possess Internet Skills despite their varying degree in their business practice.

As briefly stated before, the Internet Skill model encompasses Strategic Skills, Information Skills, Communication Skills, and Content-creation skills. We tested the relationship among the skills, as well as their relationships to internet usage and business competitiveness construct, manifested in Strategic Flexibility and Organizational Growth. From the empirical study, we observe the dominance of Communication Skills, that show direct and in direct effects on Content-creation Skills, Internet Usage, Strategic Flexibility and Organizational Growth. The second most important Internet Skills is Strategic Skills, with observed effect on all the target variables except Internet Usage and Organizational Growth. On the contrary, Information and Content-creation Skills have little to no effect on the important aspects of business competitiveness.

Previously, we argued that in business setting, strategy is the essential driver of organizational performance. Among MSMEs, it is suggested that they possess internet strategic skills to be able to formulate strategy and utilize internet with orientation toward improving their business performance. This is only partially proven in the study. Although Strategic Skills precedes the presence of Information Skills, Communication Skills, Content-creation Skills, it only has effect on Strategic Flexibility aspect of business competitiveness. As Strategic Skills is akin to goal orientation toward market, it is understandable that possessing Strategic Skills in advance can help small business to proactively anticipate changes in many important business aspects, such as business partnership, market opportunities, and technology needs (Celuch & Murphy, 2010). The impact of Strategic Skills to business competitiveness is amplified through increase of internet use, particularly capital-enhancing activities (Celuch, Murphy, & Callaway, 2007). Meanwhile, the effect of possessing goal orientation toward market using the internet on Organizational Growth remains unknown.

As the most dominant skill, possessing Communication Skills is proven indispensable to acquire business competitiveness. As Communication Skills involve the activity of





exchanging messages, message comprehension, and ability to negotiate with the other people, it is imperative that MSMEs have sharp internet Communication Skills in conducting their business. This proves and extends previous research of internet usage among MSMEs, that primarily concerns communication domains (Murphy, Celuch & Callaway, 2007). The increase in Communication Skills can equal to increase in business competitiveness, mainly because it can create new business opportunities and manage business more efficiently (Tan et al., 2010). On a greater extent, possessing Communication Skills may also increase their internationalization, but this warrants another research in itself (Lohrke, Franklin, & Frownfelter-Lohrke, 2006). It is suggested that MSMEs hone their Communication Skills by setting up business profile, maintain contact with customers or suppliers using the internet.

Previously, we discussed the importance of possessing Strategic and Communication Skills. While Information and Content-creation skills do not have effect on business competitiveness, this does not necessarily mean that both of the skills are unimportant to MSMEs. The low level of Information and Content-creation Skills possibly result from low level of information selection and evaluation activity and content-creation activity among Indonesian MSMEs. The low level of Information Skill may be attributed to the fact that generally, adults in Indonesia have low level of information proficiency and literacy problem should be priority of policy makers, as it directly affects Communication Skills, which shown to be predictors of small business competitiveness.

Earlier, we provide argument that the Internet Skills are sequential in nature. Although the presence of Strategic Skills is important to acquire other Internet Skills, the result also indicates that internet skills can also be employed separately, independent of each other and would still have effect on small business competitiveness, particularly through the increasing use of capital-enhancing Internet Usage. This extends previous studies on the effect of internet usage, which warrant that capital-enhancing internet activities will lead to more benefits and knowledge of MSMEs (Hargittai & Hinnant, 2008, Celuch, Murphy, & Callaway, 2007, van Deursen & van Dijk, 2015). MSMEs that engage in more recreational activities will not gain business competitiveness, while MSMEs that engage in more capital-enhancing activities will increase their business competitiveness. It should be noted that the results of this study also indirectly accentuate notion that small businesses that are more adept in internet technology and which engage more in internet technology, will obtain greater benefit, thus increasing knowledge gap between MSMEs (Arendt, 2008).

Another important finding is that nearly all of the determinants proposed are supported in that research. This confirms that gender, owner or manager's age, internet experience, size of firms, firm revenue, and firm age have effects to some extent to the structural model. In particular, the impact of gender is differing across the target variables, with male tend to have higher Strategic and Information Skills,

and female have higher Communication and Content-creation Skills. This could be attributed to the fact that in Indonesia, male tend to dominate top managerial position (World Economic Forum, 2020), while female tend to be employed in public relations



and content-creation position in the company (Grunig, Toth, & Hon, 2013). Owner or manager's age is also something that contradicts previous research, who found that younger owner or manager are more likely to have technological competencies and more flexible toward their business approach (Davis & Harverston, 2000). This study rebukes the notion, which find that as owner and manager's age gets older, their Internet Skills and their firm's business competitiveness also increase. We argue that it is particularly due to their own experience, as experienced entrepreneurs are more likely to succeed.

Internet Experience is shown to positively associated with all types of the skills, with the exception of Content-creation Skills. This indicates that Internet Skills is something that can learned over time, and increase over time with escalating use and experience. In addition, this research supports previous findings that businesses with more working capital are more likely to thrive (Halabi & Lussier, 2014), evidenced in larger size of firm and larger firm revenue that shows better effect on Internet Skills and business competitiveness. Arguably, it is because they have more resources to be allocated to educate their employees in Internet Skills or they can afford to hire employees with better internet skills. The findings support traditional business inferences, that businesses with more capital, in term of human or financial are more likely to succeed. In addition, the effect of Firm Age on all aspects of Internet Skills and business competitiveness suggest that as firm mature and gain more business experiences, they are more likely to expand their knowledge in technology, thus increasing their competitiveness. Based on the empirical results, below is the revised model of Internet Skills for Small Business Competitiveness.

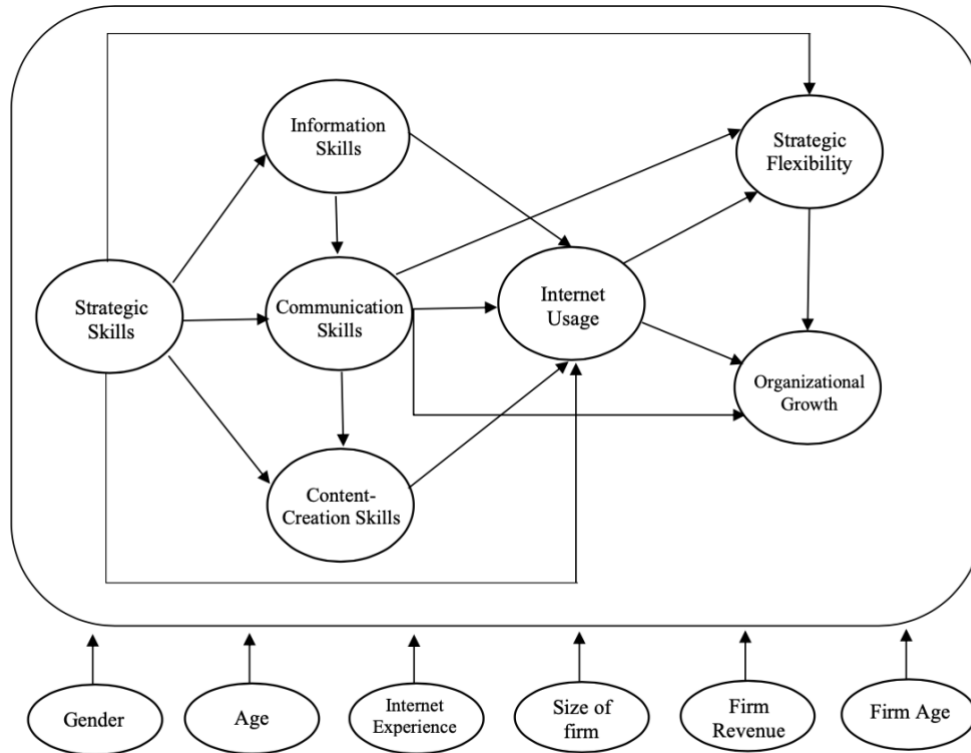


Figure 4. Final Model of Internet Skills for Small Business Competitiveness

## Conclusions

This study seeks to answer the question of an Internet Skill model that can increase small business competitiveness, as well as how the varying degree of internet skills are associated with internet usage and business competitiveness. We focus on Indonesian MSMEs and take context of small businesses in developing country, which are severely understudied in international literature. For this study, 136 owner or managers of MSMEs were surveyed with questions adapted to the unique mobile-centered use of internet in developing country. Owing to the small sample, we use Partial Least Square, part of Structural Equation Modelling (PLS-SEM) to analyze the data. To complement the analysis, correlation analysis and several follow-up Multiple Regression analyses were used to further explain the data.

The first question is addressed by a model that puts forward Strategic Skills before attaining Information Skills, Communication Skills, and Content-creation skills, respectively. Among the skills, Communication Skills and Strategic Skills show effect dominance over other types of Internet Skills on a small business competitiveness, particularly through Strategic Flexibility and Organizational Growth—with Communication Skills being the most dominant of the two. Internet usage, particularly capital-enhancing activities are shown to mediate and amplify the effects of all the Internet Skills aspects.

MSMEs are suggested to hone in their Communication and Strategic Skills in particular, if they wish to increase their business competitiveness. The low Information



Skills of Indonesian MSMEs requires policy makers to provide extra measures to address the low level of literacy because it would directly affect internet Communication Skill of MSMEs which contribute to their business competitiveness. In addition, Content-creation skill does not prove to contribute to small business competitiveness in any aspect.

Meanwhile, we also find that the proposed structural model of Internet Skill for Small Business Competitiveness is determined by gender, owner or manager's age, internet experience, size of firms, firm revenue, and firm age to some extent. However, male is found to have larger effect on Strategic and Information Skills, while female have higher Communication and Content-creation Skills. For other determinants, it confirms traditional notion of business practice, whereby businesses with more resources and experience tend to have larger Internet Skills and business competitiveness.

In conclusion, we can infer that MSMEs which have higher internet skills and use more internet for capital-enhancing activities (i.e. getting news, business relation information, enroll in online course or training, and use financial application), are more likely to have greater business competitiveness. Indirectly, this study also confirms the argument that small businesses which are technology savvy and use more internet technology, will acquire greater benefit, thus unfortunately increase digital knowledge gap between MSMEs.

### Limitation of the Study and Future Research Directions

In this research, we acknowledge that not all effects are statistically significant with  $p$ -value less than 0.05. We purposely include all the effects, ranging from weak to large in order show a holistic picture of Internet Skills for small business competitiveness in developing countries. Due to small sample size of MSMEs, we acknowledge that it may contribute to less statistical significance value in some of the construct effects.

The American Statistical Association (Wasserstein & Lazar, 2016) notes while  $p$ -value can be a convenient statistical measure of null hypothesis rejection, it is often misinterpreted. Firstly,  $p$  values cannot measure the probability that hypothesis is true. A social science conclusion should not be based on binary "yes-no" decision, thus researchers are encouraged to factor in many other context, such as the design of the study and other evidence of the phenomenon being studied. Relying on  $p$  values alone cannot warrant whether the conclusion is correct or incorrect (Wasserstein & Lazar 2016). Betensky (2019) also notes that  $p$ -value cannot be interpreted in isolation, rather must be accounted for its sample size and meaningful effect size. Based on this argument, we decide that any effect, albeit small, are worth to be reported and can be considered as inferences of true effect. Although, we do not deny that this proves to be a limitation in our study.

Therefore, further research should have much larger sample size to account for this limitation. In our case, however, since most MSMEs in Indonesia are not formally registered, obtaining large sample size proves to be difficult. Reaching out



to MSMEs communities are proven to be somewhat effective, although we acknowledge that the response rate would not be too great.

At last, since our model is the Internet Skill for Small Business Competitiveness, it would be interesting if this could be adapted and applied to other context beside small business context. Adapting the model for general population would also be compelling, since this research is limited only to small business in developing country, particularly Indonesia. Moreover, there is still the matter of digital knowledge gap and marginalization of MSMEs within global value chain (Capri, 2019, Tambunan, 2008). Future work should further advance studies in this matter, from theoretical standpoint to empirical studies.



## Appendices

No	Measurements
Strategic Skills (N = 6, $\alpha = 0.805$ )	
1	Using the internet, I can set goals for my business
2	I often gain benefits from using the internet or mobile applications
3	I often make plan to achieve better product position on the market using the internet or mobile applications
4	I often make plan to grow the market using the internet or mobile applications
5	I offer make plan to introduce new products using the internet or mobile applications
6	I am able to utilize my business resources better using the internet or mobile applications
Information Skills (N = 6, $\alpha = 0.782$ )	
1	I normally search for information I need using the internet or mobile application
2	I often find the information I am looking for from the internet or mobile application
3	I someetimes select the information I obtain from the internet or mobile application
4	I sometimes check information I receive, on another website or application
5	I sometimes examine the information displayed in other part beside headline or top feeds
6	I normally use more than one search keyword
Communication Skills (N = 4, $\alpha = 0.738$ )	
1	I sometimes attract attention online with the business profile I have set up
2	I am able to make and maintain contact with people on the internet or other mobile applications for my business
3	I am able to improve the visibility of my business profile with the internet or other mobile applications
4	I often communicate with customers or suppliers to reach decision and realize transactional using the internet or mobile applications
Content-creation Skills (N = 6, $\alpha = 0.797$ )	
	I am able to create and publish these content on the internet with acceptable quality

1	Textual content
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2	Music content
3	Video content
4	Photo or image content
5	Multimedia content
6	Remixed content
Usage diversity (N = 9, $\alpha = 0.810$ )	
	Recreational activities (negatively recoded)
1	Playing internet games
2	Listening to music on the internet or mobile application
3	Watching videos on the internet or mobile application
4	Checking sports scores
5	Capital-enhancing activities (positively coded)
6	Getting national or international news
7	Getting business-related information
8	Getting product information
9	Using training or online course website or application
10	Using banking and financial website or application
Strategic Flexibility (N = 5, $\alpha = 0.869$ )	
	My firm is able to
1	Adapt to resource reallocation needs
2	Adapt to the need to modify business partnerships
3	Adapt to the emerging market opportunities
4	Adapt to changing environmental conditions
5	Adapt to changing organizational technology needs
Organizational Growth (N = 5, $\alpha = 0.759$ )	
	Compared to my competitor, I think ...
1	My product is more attractive



2	I am satisfied with my sales amount
3	I have higher number of customers
4	My sales is relatively consistent
5	In general, my firm has effort to enlarge the employees

**Table 1.** Questionnaire Measurement in English

No	Measurements
<b>Strategic Skills (N = 6, <math>\alpha</math> = 0.805)</b>	
1	Dengan menggunakan internet, saya dapat menetapkan tujuan untuk bisnis saya
2	Saya sering mendapatkan keuntungan dari penggunaan internet atau aplikasi seluler
3	Saya sering membuat rencana untuk meningkatkan posisi produk di pasar menggunakan internet atau aplikasi seluler
4	Saya sering membuat rencana untuk mengembangkan pasar menggunakan internet atau aplikasi seluler
5	Saya sering membuat rencana untuk memperkenalkan produk baru menggunakan internet atau aplikasi seluler
6	Saya dapat memanfaatkan sumber daya bisnis saya dengan lebih baik menggunakan internet atau aplikasi seluler
<b>Information Skills (N = 6, <math>\alpha</math> = 0.782)</b>	
1	Saya biasanya mencari informasi yang saya butuhkan menggunakan internet atau aplikasi seluler
2	Saya sering menemukan informasi yang sedang saya cari dari internet atau aplikasi seluler
3	Saya terkadang memilih informasi yang saya peroleh dari internet atau aplikasi seluler
4	Saya terkadang memeriksa informasi yang saya terima, di situs web atau aplikasi lain
5	Kadangkala, saya memeriksa informasi yang ditampilkan di bagian lain selain headline atau feed teratas
6	Saya biasanya menggunakan lebih dari satu kata kunci pencarian





Communication Skills (N = 4, $\alpha = 0.738$ )	
1	Kadangkala, saya menarik perhatian orang di internet dengan profil bisnis yang telah saya buat
2	Saya dapat membuat dan menjaga kontak dengan orang-orang lewat internet atau aplikasi seluler lainnya untuk kepentingan bisnis saya
3	Saya dapat meningkatkan visibilitas profil bisnis saya dengan internet atau aplikasi seluler lainnya
4	Saya sering berkomunikasi dengan pelanggan atau pemasok untuk mencapai kesepakatan dan membuat transaksi menggunakan internet atau aplikasi seluler
Content-creation Skills (N = 6, $\alpha = 0.797$ )	
	Saya dapat membuat dan mempublikasikan konten ini di internet dengan kualitas yang cukup baik
1	Konten teks
2	Konten musik
3	Konten video
4	Konten foto atau grafis
5	Konten multimedia
6	Konten remix
Usage diversity (N = 9, $\alpha = 0.810$ )	
	Recreational activities
1	Bermain game internet
2	Mendengarkan musik di internet atau aplikasi seluler
3	Menonton video di internet atau aplikasi seluler
4	Memeriksa skor olahraga
	Capital-enhancing activities (
5	Mendapatkan berita nasional atau internasional
6	Mendapatkan informasi terkait bisnis
7	Mendapatkan informasi produk
8	Menggunakan pelatihan online atau aplikasi kursus online
9	Menggunakan situs web atau aplikasi perbankan dan keuangan



Strategic Flexibility (N = 5, $\alpha$ = 0.869)	
	Perusahaan saya dapat ..
1	Beradaptasi dengan perubahan kebutuhan sumber daya
2	Beradaptasi dengan kebutuhan untuk mengubah kemitraan bisnis
3	Beradaptasi dengan peluang pengembangan pasar
4	Beradaptasi dengan perubahan kondisi lingkungan
5	Beradaptasi dengan perubahan kebutuhan teknologi organisasi
Organizational Growth (N = 5, $\alpha$ = 0.759)	
	Dibandingkan dengan kompetitor, saya pikir ...
1	Produk saya lebih menarik
2	Saya puas dengan jumlah penjualan saya
3	Saya memiliki jumlah pelanggan yang lebih banyak
4	Penjualan saya relatif konsisten
5	Secara keseluruhan, perusahaan saya memiliki upaya untuk memperbanyak karyawan

**Table 2.** Questionnaire Measurements in Indonesian



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